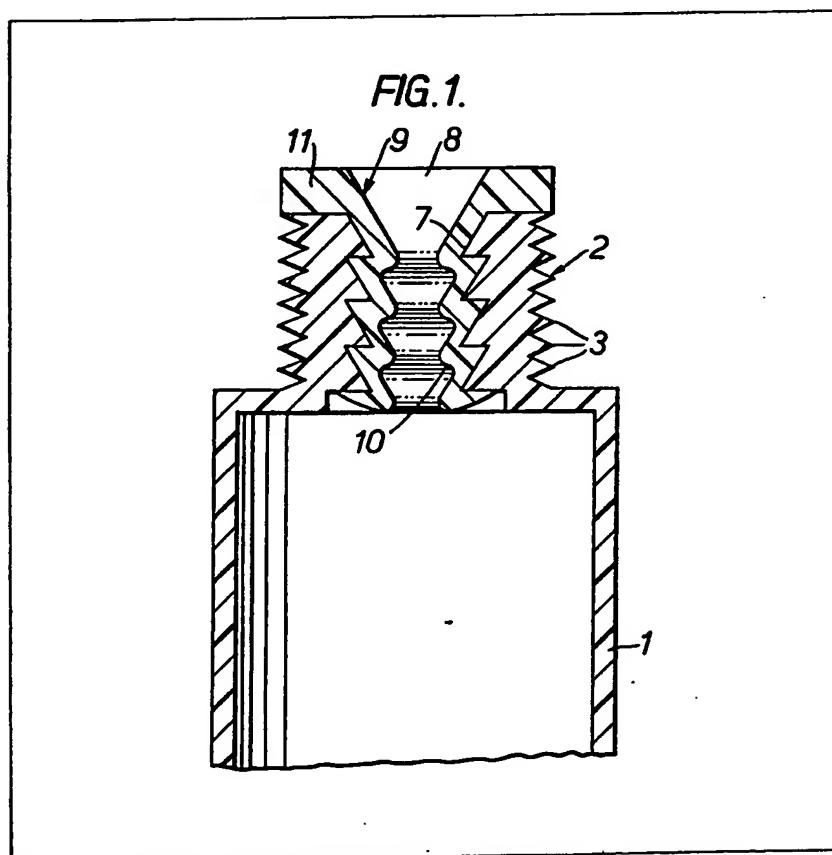


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(71) Applicants  
Klaus-Peter Dahm,  
Stettiner Strasse 25A,  
3014 Laatzen 3,  
Germany.  
(72) Inventors  
Klaus-Peter Dahm  
(74) Agents  
M.J. Stephens & Co.,  
Royal Building,  
11 St. Andrew's Cross,  
Plymouth PL1 2DS.

(54) A wiper device for a cosmetic applicator

(57) A wiper device for a cosmetic applicator comprises a resilient sleeve (9) force-fitted into the neck (2) of a cosmetic container (1) to receive an applicator supported by a shaft carried by the container cap. The resilient sleeve (9) is either smooth-walled internally and externally and deformed by annular projections (7) inside the neck (2) to form resilient wiper lips (10) or has a smooth internal surface and annular projections on its outer surface which deform, to form the inwardly projecting wiper lips, on contact with a smooth-walled neck. The wiper lips are normally sealingly compressed against the applicator shaft while the applicator is in the container and wipe excess cosmetic from the shaft and applicator on withdrawal of the applicator from the container.



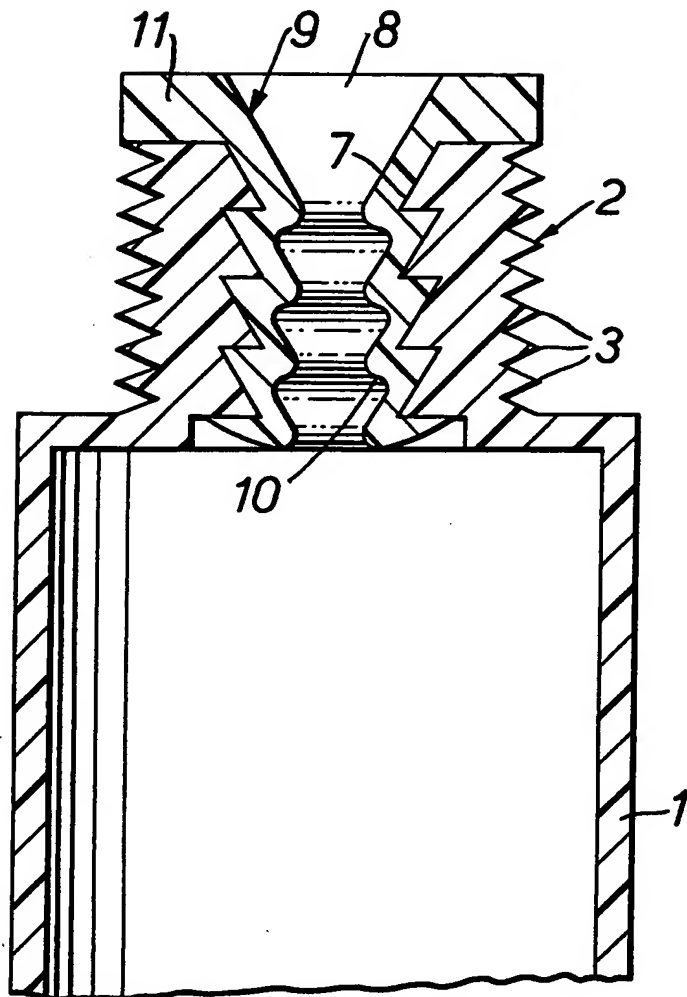
The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

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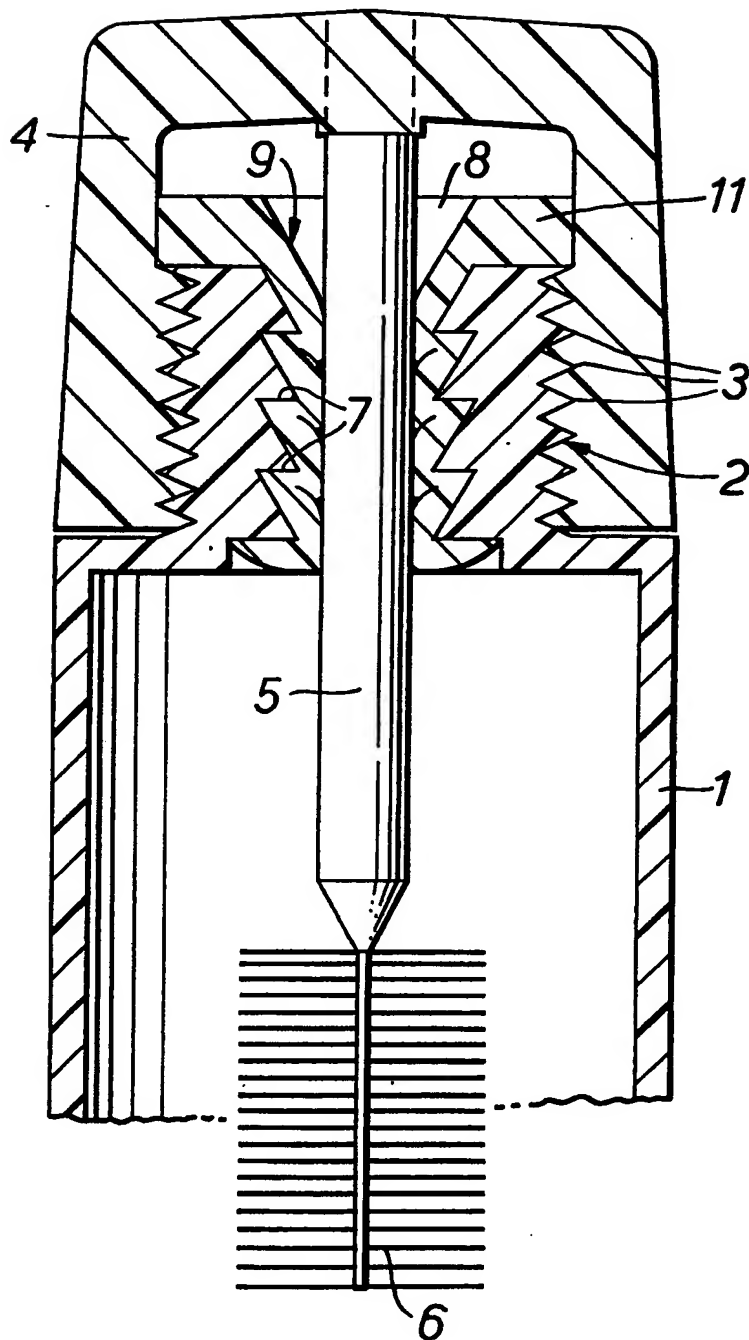
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FIG. 1.



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FIG. 2.



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FIG. 3.

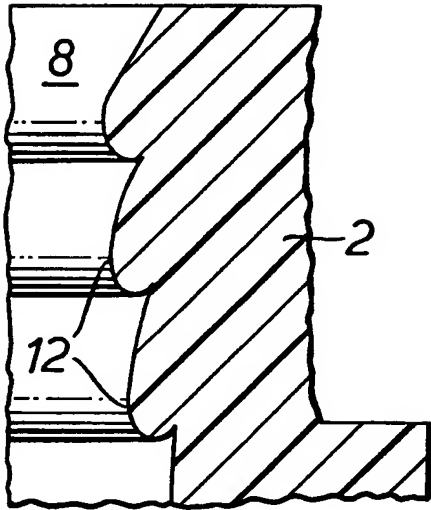


FIG. 4.

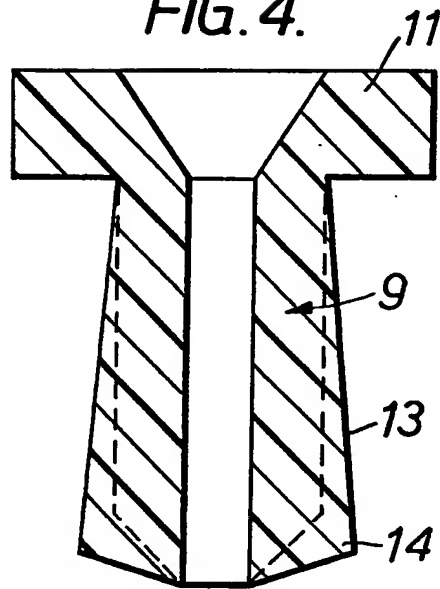


FIG. 5a.

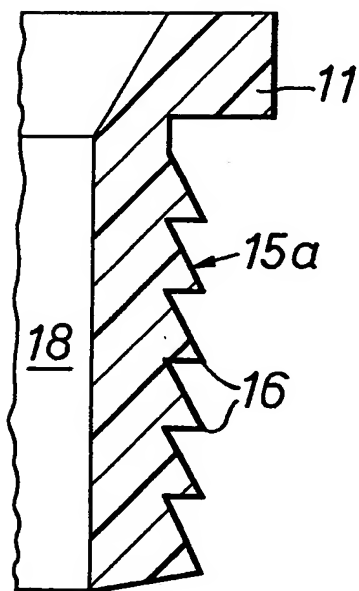
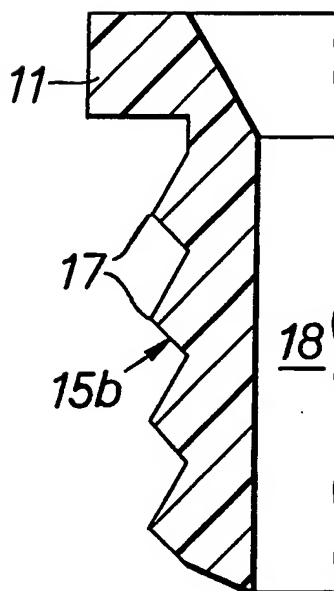


FIG. 5b.



## SPECIFICATION

## A wiper device for a cosmetic applicator

5 The present invention relates to a wiper device for an applicator, such as a brush or absorbent foam swab for applying a liquid or pasty cosmetic preparation from a container, the applicator being carried by a shaft which is fixed to a cap of the container itself and being submerged in the preparation in the container when not in use. Such containers are generally provided with a wiper device at or adjacent the opening closed by the cap for wiping excess preparation from the shaft and from the applicator on withdrawal of the latter from the container, for use. Although generally used for cosmetic preparations, such containers may of course be used for other liquids or pastes which are to be spread on a surface by an applicator.

20 As is known from U.K. Patent No. 1545627, of the same applicant, the wiper device provided inside the opening of the container may comprise several annular wiper lips of resilient material, having asymmetric triangular profiles. These lips surround, and are compressed against, the applicator and its shaft as the applicator is pushed into the container and apply an even compressive force around the entire circumference, and along a substantial length, of the shaft. When the applicator is being withdrawn from the container, the lips wipe off any of the preparation adhering to the shaft and any surplus preparation on the applicator itself and return it to the container. Thus a container provided with such a wiper device allows the preparation to be taken from the container without any mess or spillage, and, in addition, controls the amount of the preparation which is absorbed by the applicator and automatically cleans the applicator shaft.

40 The manufacture of the wiper device has, however, met with some difficulty due to the very small internal diameter, only a few millimetres, of the wiper lips and the need to use internally retractable cores to make the wipers in either rubber or plastics material. In addition, the internal edges of the wiper lips are not always sufficiently well formed to provide the necessary total wiping action of the wiper device. Hence it has been found desirable to develop a wiper device which can be mass produced by a very simple manufacturing technique, even with wiper lips having extremely small internal diameters, and which will provide lips having satisfactory wiping edges.

According to the present invention, there is provided a wiper device for a cosmetic applicator comprising a resilient sleeve, having a smooth internal surface in its relaxed state, force-fitted to line an annular wall defining an access opening through which an applicator and a supporting shaft are removed from a container, the sleeve providing, by resilient deformation, a plurality of inwardly-projecting, annular wiper lips spaced apart axially along the wall.

The annular wall of the wiper device may be adapted to be fitted to the opening of a cosmetic container, for example by welding to the container,

but is preferably formed integrally with the container.

The wiper lips can be formed either by providing annular projections on the inner surface of the wall, the sleeve being formed with smooth outer and inner surfaces, or by providing annular projections on the outer surface of the sleeve, the inner surface of the said wall being smooth. In neither case is it necessary to mould internal wiper lips, on the container or on the sleeve, with extremely small internal diameters, thus avoiding the difficulties of the prior art.

In the first of the above cases, the sleeve moulds itself substantially to conform to the shape of the projections such that the wiper lips have substantially the same axial profile as the projections: in the second case the sleeve preferably deforms such that substantially its entire outer surface contacts the smooth surface of the container wall, the profile of the projections essentially being transferred to the inner surface to form the wiper lips. Thus lips may be formed with any desired profile although they are preferably so shaped and spaced that, on insertion of the applicator into the container, the sleeve is deformed by contact with the applicator shaft such that substantially its entire inner surface contacts the shaft.

According to a further aspect of the invention there is provided a cosmetic applicator device comprising a container for a cosmetic preparation and an applicator carried at one end of a shaft which is fixed at its opposite end to a cap for the container such that, when the cap is fitted to close the container, the applicator is housed in the container, the container having a wiper device comprising a resilient sleeve having a smooth internal surface in its relaxed state, force-fitted to line an annular wall of the container defining the access opening closed by the cap, the sleeve providing, by resilient deformation, a plurality of inwardly-projecting, annular wiper lips spaced apart axially along the wall when the applicator is withdrawn from the container and being deformed when the applicator is housed in the container such that substantially its entire inner surface contacts the applicator shaft.

Several embodiments of the invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:

115 *Figure 1* is a partial longitudinal-sectional view of a bottle-shaped cosmetic container provided with a wiper device according to the invention;

*Figure 2* is a view similar to *Figure 1*, showing the container with an applicator device and cap fitted to it;

*Figure 3* is a partial longitudinal-sectional view of part of a second embodiment of the invention;

*Figure 4* is a longitudinal-sectional view of an alternative tube for use in either of the embodiments of *Figures 1* and *3*; and

*Figure 5* is a longitudinal-sectional view of part of a wiper device according to a further embodiment of the invention.

The drawings are enlarged to a scale of approximately 1:10.

Referring to Figures 1 and 2 of the drawings, a bottle-shaped container 1 for a cosmetic preparation, such as nail varnish, is shown which may, for example, be of a plastics material. The bottle 1 has a neck 2 having external screw-threading 3 for receiving a screw cap 4. The cap 4 has one end of a shaft 5 attached centrally of its circular end wall such that the shaft projects from the inside of the cap 4 and carries an applicator 6, in the form of a brush, at its free end. When the cap 4 is screwed on to the container 1 the brush 6 is submerged in the liquid preparation (not shown) inside the container.

The internal surface of the neck 2 of the container is provided with several, in the example four, similar annular projections 7, each having a saw-tooth axial profile, arranged such that the mouth 8 of the container is generally funnel-shaped. A sleeve comprising a length of thin-walled resilient tube 9 having a larger outer diameter than the greatest diameter of the mouth 8 is inserted in the neck 2, the resilience and thickness of the tube being such that it shapes itself to fit over the projections 7, thereby taking on substantially profile as the saw-tooth projections 7. Thus the tube 9 forms inwardly-projecting resilient annular wiper lips 10 of smaller internal diameter than the internal projections formed in the neck 2. The tube 9 is provided at one end with a radially-outwardly projecting flange 11 which, when the tube 9 is inserted in the neck 2 as shown, grips the free end face of the neck to secure the tube in position without the need for any further means of fastening.

The resilience of the tube 9 is such that when the container is open with the applicator withdrawn as shown in Figure 1, the tube 9 which forms the wiper device takes on the distinctive shape of the four wiper lips 10. When the container is closed, however, with the applicator 6 inserted in it as shown in Figure 2, the wiper lips 10 are deformed radially and compressed against the wall of the neck 2, thereby encircling the shaft 5 of the applicator 6, evenly and substantially without any cavities, forming a cylindrical jacket.

When the cosmetic preparation is to be used, the screw cap 4 is unscrewed and the applicator 6 is withdrawn from the container 1, the wiper device 10 wiping off any preparation adhering to the shaft 5 and any surplus preparation from the applicator 6, ensuring that substantially no excess liquid is available to soil the user.

Referring to Figure 3 of the drawings, part of the neck 2 only of a container for a cosmetic preparation is shown. In this embodiment, annular projections 1 are formed on the internal surface of the neck 2 which have a rounded saw-tooth shaped profile rather than the sharp form of the projections of Figures 1 and 2; the mouth 8 of the container is again generally funnel-shaped and in all other respects the embodiment of Figure 3 is similar to that of Figures 1 and 2.

Figure 4 of the drawings shows only a tube 9 for insertion in the neck 2 of a container 1 according to Figures 1 or 3. In this embodiment the generally cylindrical wall of the tube 9 of Figure 1 is reinforced by a thickened portion, shown in broken lines, of the outer wall (13) and lower end wall (14), which helps

to retain the tube 9 in the neck 2 when the applicator is being pulled out of the container 1.

In the embodiments of Figures 1 to 4, the shape of the wiper lips is defined by the shape of the annular projections formed in the neck 2 of the container 1 and the tube 9 is formed with smooth internal and external walls, whether cylindrical or conical; the parts of the wiper device are thus simple and cheap to manufacture and the tube can easily be pushed into the neck of the container to form the wiper lips.

Should the specially-shaped neck of the container be undesirable and an ordinary smooth necked bottle be preferred then the embodiment of Figure 5 may be employed. In this embodiment the shape of the wiper lips is defined by a moulded insert 15 of resilient material, corresponding to the tube 9 but applicable to a smooth necked container (not shown). The insert 15 has a smooth internal surface 18 but is formed with annular projections 16, 17 on its external surface. These projections may, for example, display a saw-toothed profile as shown by the projections 16 on the right-hand side of the Figure or may have the asymmetric-triangular profile shown by the projections 17 on the left-hand side of Figure 5. Whatever the form of the annular projections, the resilience of the insert material is such that, when the insert is force-fitted into the cooperating neck of a container, the external projections 16, 17 are compressed substantially to conform to the smooth internal wall of the neck and corresponding annular projections, comprising the wiper lips, are formed on the inner surface of the insert.

A moulded shape 15 developed in accordance with this invention with projections 16, 17 on its outer surface and a smooth inner surface, is easy to manufacture and has the advantage that it can be fitted easily into an ordinary smooth necked bottle.

It will be understood that the invention further includes a method of forming a wiper device for a cosmetic applicator adjacent an access opening through which an applicator and supporting shaft are removed from a container, including forcing a resilient sleeve having a smooth internal surface through the opening to line an annular wall defining the opening and to deform the sleeve to provide a plurality of inwardly-projecting, annular wiper lips spaced apart axially along the wall.

## 115 CLAIMS

1. A wiper device for a cosmetic applicator comprising a resilient sleeve, having a smooth internal surface in its relaxed state, force-fitted to line an annular wall defining an access opening through which an applicator and a supporting shaft are removed from a container, in use, the sleeve providing, by resilient deformation, a plurality of inwardly-projecting, annular wiper lips spaced apart axially along the wall.

2. A wiper device as claimed in Claim 1, in which the resilient sleeve has a radially-outwardly projecting annular flange at one end which cooperates with, and grips, the end face of the wall defining the access opening to retain the sleeve in its position of use.

3. A wiper device as claimed in Claim 1 or Claim 2, in which the annular wall defining the access opening has a plurality of annular projections on its inner surface having axial profiles corresponding to the profiles of the wiper lips and the resilient sleeve, having smooth outer and inner surfaces, fits over the projections to form the wiper lips.

4. A wiper device as claimed in Claim 3, in which the projections have sharp saw-tooth profiles.

5. A wiper device as claimed in Claim 3, in which the projections have rounded saw-tooth profiles.

6. A wiper device as claimed in Claim 1 or Claim 2, in which the sleeve is formed with annular projections on its outer face and is deformed such that substantially the entire outer surface contacts a smooth internal surface of the said wall.

7. A wiper device as claimed in any preceding claim, in which the annular wall is integral with the cosmetic container.

8. A cosmetic applicator device comprising a container for a cosmetic preparation and an applicator carried at one end of a shaft which is fixed at its opposite end to a cap for the container such that when the cap is fitted to close the container the applicator is housed in the container, the container having a wiper device comprising a resilient sleeve, having a smooth internal surface in its relaxed state, force-fitted to line an annular wall of the container defining the access opening closed by the cap, the sleeve providing, by resilient deformation, a plurality of inwardly-projecting, annular wiper lips spaced apart axially along the wall when the applicator is withdrawn from the container and being deformed when the applicator is housed in the container such that substantially its entire inner surface contacts the applicator shaft.

9. A wiper device for a cosmetic applicator, substantially as herein described with reference to, and as shown in, the accompanying drawings.

10. A method of forming a wiper device for a cosmetic applicator adjacent an access opening through which an applicator and supporting shaft are removed from a container, including forcing a resilient sleeve having a smooth internal surface through the opening to line an annular wall defining the opening and to deform the sleeve to provide a plurality of inwardly-projecting, annular wiper lips spaced apart axially along the wall.

11. A method as claimed in Claim 10, in which the sleeve is formed with smooth internal and external surfaces and is force-fitted over annular projections on the internal surface of the annular wall to form the wiper lips.

12. A method as claimed in Claim 10, in which the sleeve is formed with annular projections on its external surface, the sleeve being deformed so that substantially its entire outer surface contacts the wall and the thickened annular portions of the sleeve form the projecting wiper lips on its internal surface.